

## **Satellite Telemetry Interagency Working Group (STIWG)**

### **Minutes - Meeting July 18, 2000**

**Introduction:** David Wingerd of the U. S. Army Corp of Engineers and STIWG chairman for year 2000 welcomed STIWG members to the Northwest Division Headquarters in Portland, Oregon and provided an overview of the meeting facilities. David then presented this meeting's agenda (attachment #1) and opened the meeting.

**Minutes:** The minutes of the March 2000 meeting were approved as written. The minutes from the March meeting were distributed via e-mail as a WordPerfect file and as an Adobe Acrobat PDF file. Attachment #2 contains the meeting's sign-in sheet.

**Treasure Report:** Donald (Doc) Carver, OFCM, (STIWG Treasurer) presented the status of funding.

\$92,158 is currently in the account.

Doc then presented a very thorough review of the STIWG funding account and a document (attachment #3) detailing all transactions dating from December 1997 through June 2000. Doc's presentation included details of a review within OFCM regarding the history of the STIWG account. DOC met with Mack Kato of NOAA's finance office in an effort to discover exactly how and when funds committed by several member agencies during years in the mid and late 1990s disappeared from the account during a 1999 audit. Unfortunately it could not be determined as to the exact bookkeeping event that resulted in the lose of funds, but it is now understood that money thought to be carried over from one fiscal year to the next was not carried over. As a result of these events, OFCM has deployed a new accounting system to insure that all future STIWG fund transactions are tracked and verified. STIWG must advise OFCM to prepare for end of year carry over events.

#### **Meeting with OFCM regarding STIWG account:**

In an attempt to recoup these lost funds, Dave Wingerd and Ernest Dreyer corresponded with NOAA finance officials and met with OFCM members. Dave and Ernest provided a detailed report of near term and long term STIWG sponsored procurements and how these purchases were being adversely effected by the lost funds. Attachment #4 details the correspondence. As a result, NOAA finance stated that if any end of year (1999) money can be found within NOAA, it will be provide to STIWG in an attempt to offset the losses from earlier years.

**High Data Rate Contract:** Warren Dorsey (NESDIS/OSD) was not able to attend this meeting. Jim Wydick (NESDIS contractor) did present a slide (attachment #5) detailing the spending history of HDR. Jim also briefed the committee on the status of demodulator testing at Wallops. The 300 baud demodulators have been successfully tested and 2 addition test demods are to be delivered during October 2000.. Technical problems have been encountered with the 1200 baud units. NESDIS also advised that there will probably be 2 vendors with certified HDR DCPs by the end of this year.

Phil Sielaff (BLM) briefed STIWG of the activities involving the technical evaluation contract

awarded to Cy Settles. Cy is to provide an expert appraisal of the HDR specifications and to evaluate all of the technical questions presented by the various DCP manufacturers. Cy has already determined that there are several unresolved technical issues involving the 1,200 baud DCPs and that additional testing of the 1,200 baud spec is required. Cy stated that the 300 baud specs are valid. See attachment #6.

**Other HDR issues:** At this point in time STIWG has no other outstanding issues regarding the HDR, we are awaiting the conclusion of Cy's study. STIWG does request a review of the NESDIS HDR implementation plan and requests a printed document that details the plan.

**DOMSAT and DOMSAT II:** Current contract valid through September 30, 2000 and the final year of contract extensions will expire September 30, 2001. Monthly costs are \$3,100 or \$37,200 for the year.

A CBD announcement to modify or extend the current contract extension failed. There must now be an open procurement for the next DOMSAT contract. NESDIS advised that the paperwork for the next DOMSAT contract is complete but all further actions are on hold until \$130,000 is obligated to the contract by STIWG. Considering the current funding level of STIWG at \$92,158 and that \$37,200 is already committed to the FY00 DOMSAT extension, leaving a balance of \$54,958, STIWG must acquire at least \$75,042 to move forward to the first year of the new DOMSAT contract.

**DAPS II:** No new information on this topic. NESDIS is in a "Blackout" regarding this procurement action. Awarding of a contract is expected during FY 2000.

#### **Other Business:**

Ernest Dryer briefed STIWG on continuing activities within the USGS regarding their upgrading and reconfiguration of Local Readout Ground Station (LRGS) and the potential of using Extensible Markup Language (XML) documents to communicate DCP information. A detailed presentation on these and other new technologies and techniques was presented to this session's TWG meeting.

Larry Cedrone of the NWS briefed STIWG on the continuing difficulties encountered with the numerous methods employed by the DCS community regarding the programming of DCPs. Larry presented a model based on the 1989 model of STIWG sponsored Decimal Encoding Format. Larry agreed to define a model suitable to the DCS community and will be contacting STIWG member agencies for their support.

Dave Wingerd led a discussion involving the STIWG Terms of Reference. This document, drafted in 1984 and signed in July of 1985, may be in need of modernization. A continuation of this discussion is expected during the next meeting. The original Terms of Reference document is attached.

**Next Meeting:** tentatively, Tuesday Oct. 17<sup>th</sup> at Wallops Island, Va.

**About this document:**

The WordPerfect version of this document, distributed via e-mail, contains the meeting's minutes only. A complete version of these minutes along with all attachments is presented in this Adobe PDF format and viewable via a web browser.

## Agenda for July 18, 2000 STIWG Meeting:

### Satellite Telemetry Interagency Working Group (STIWG) Agenda - Meeting July 18, 2000

9:00 a.m.

- \* Opening Remarks (Wingerd) ✓
- \* Welcome (Portland) ✓
- \* Approval of Agenda ✓
- \* Approval of Minutes of Last Meeting ✓
- \* Treasurer's Report (OFCM) ✓
- \* Meeting with OFCM on the STIWG Account (3/23/00) ✓
- \* High Data Rate Demodulator Status (NESDIS) ✓
- \* Cy Settles Contract - Certification Standards (Sielaff) ✓
- \* High Data Rate DCP Issues ✓  
    (Dryer) ✓  
    (NESDIS) ✓
- \* Ilex Engineering Contract -- End User DOMSAT Receive Station (DRS)  
    Decoding Software  
    Status of USGS Contract (Dreyer)  
    Status of Corps Contract (Heitzman)
- \* DOMSAT-2 Contract (NESDIS) ✓
- \* Future STIWG Contracts ✓  
    High Data Rate Demodulators ✓  
    Test Transmitter Locator Demonstration ✓  
    Code Division Multiple Access (CDMA) Options ✓
- \* DCP Message Format Contents (Cedrone)
- \* DAPS Outages - Users Feedback on its Impact (NESDIS)
- \* Updating the STIWG Terms of Reference (Mason)

# Sign in Sheet -- STIWG Meeting July 18, 2000 Portland, OR.

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**Sign in Sheet -- STIWG Meeting July 18, 2000 Portland, OR.**

[illegible]

## STIWG

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Date	Num	Transaction	Spend	C	Receive	Balance
12/9/1997		USGS/WRD cat: GOES Support memo: 74060011035, acct #7-4060-11100			30,000.00	413,265.00
12/9/1997	RTP	USDA/Forest Service cat: GOES DCS DOMSAT	35,124.00			378,141.00
9/15/1998	RTP	FOREST SERVICE cat: GOES Support memo: 98-IA-181			15,000.00	393,141.00
9/15/1998	RTP	USGS/WRD cat: GOES Support memo: 8-4060-0056			20,000.00	413,141.00
10/8/1998	RTP	NESDIS cat: GOES DCS DOMSAT memo: Option Year #8	35,124.00			378,017.00
11/16/1998	RTP	NESDIS cat: HDR DEMODS memo: 50-DGNE-5-00089	33,000.00			345,017.00
2/3/1999	RTP	NESDIS cat: GOES DCS DOMSAT memo: DOMSAT Extension Contract	109,000.00			236,017.00
4/2/1999		AMENDED 1999 C/O (\$142.8K) cat: Other Exp memo: \$800 balance per ML RTP 1/7/99	235,217.00			800.00
4/30/1999	RTP	NESDIS- CANCELED cat: GOES DCS DOMSAT memo: DOMSAT Contract Extension			109,000.00	109,800.00
5/13/1999	RTP	USDA/Forest Service RESUBMIT cat: GOES Support memo: 96-IA-159			15,000.00	124,800.00
11/4/1999		Carry Over FY2000, per M.Land RTP cat: Balance Adj. memo: (c/o= 108,800)	16,000.00			108,800.00
11/5/1999	RTP	NESDIS cat: DOMSAT memo: Service from 10/1/99-9/30/99	38,300.00			70,500.00
6/28/2000	12	Settles, Cy cat: Procurement memo: DCS Report	2,499.00			68,001.00

Balance = \$ 68,001.00

## STIWG

STIWG - Canada

Page 1

7/17/2000

Date	Num	Transaction	Spend	C	Receive	Balance
10/1/1998		Opening Balance cat: [STIWG - Canada]			25,000.00	25,000.00
11/4/1999		Carry Over, per M.Land RTP memo: (c/o= 24,157)	843.00			24,157.00

Balance = \$ 24,157.00

Total = \$ 92,158.00

November 19, 1999

Dr. D James Baker  
Administrator National Oceanic  
and Atmospheric Administration  
14th & Constitution Ave NW  
Washington DC 20230-0001

RE: Replacement of STIWG Funds lost by OFCM.

Dear Dr. Baker:

I wish to bring to your attention an unfortunate situation. The Satellite Telemetry Interagency Working Group (STIWG) is a subcommittee to the Committee for Basic Services under Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM). STIWG has relied on the OFCM to perform treasury duties for STIWG as discussed in Chapter 6 of the National Geostationary Operational Environmental Satellite Data Collection System Operations Plan (FCM-P28-1997). To our surprise, OFCM reported by letter dated June 16, 1999, (attachment 1) that it lost \$460,000.00 of STIWG's funds.

According to OFCM records, on October 1, 1998, the STIWG account showed a balance of \$528,600.00, more than enough to carry out the STIWG's financial obligations. Unfortunately fourteen transactions in which agencies committed funds for STIWG use were not properly committed by OFCM to the STIWG account resulting in a loss of \$460,000.00. According to the OFCM internal audit the loss occurred over a period of 7 years (1989-1996) while OFCM continued to provide STIWG with treasurer's reports reflecting the amounts committed by each agency until mid 1999 when the loss was revealed.

STIWG requests that NOAA replace the funds lost by OFCM. We believe this is appropriate because (1) OFCM is under the purview of NOAA, (2) a majority of the lost funds originated from NOAA sub-agencies, (3) the focus of the STIWG expenditures are directed toward improving NOAA services, (4) these services are used and needed by other NOAA agencies and (5) NOAA has greatly benefited from past STIWG expenditures. Without these funds STIWG cannot meet its financial obligations.

Sincerely,

S. Ernest Dreyer Jr.  
Chairman, Satellite Interagency Working Group

Cc: PAUL F ROBERTS,  
NOAA, Chief of Office of Finance  
and Administration  
14th & Constitution Ave NW  
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## MEETING ON STIWG ACCOUNT (3/23/00)

### 1. Attendees

Samuel P. Williamson, Federal Coordinator  
S. Ernest Dreyer, Jr., USGS, Former STIWG Chairman  
David Wingerd, USA COE, STIWG Chairman (by telephone)  
Donald R. Carver, Assistant Federal Coordinator for DOT/FAA  
James B. Harrison, Deputy Federal Coordinator

### 2. Purpose of Meeting

To discuss the STIWG account, in particular funds intended for the STIWG account during the 1989-1996 time period which were not collected and placed in the STIWG account, or in the case of appropriated funds were not utilized when the monies were available.

### 3. The Problems.

The audit of the OFCM STIWG account revealed several factors that grossly effected the transfer and retention of funds. This was a follow-up to the discovery of the loss of about \$460,000 to the STIWG account. Mr. Williamson pointed out that neither he nor the OFCM staff was aware of the limitations below. He explains that problems fell into two groups as follows.

#### a. NOAA Fund Transfers:

- Because OFCM is a part of NOAA, funds from NOAA agencies can only "be held" or used during the current fiscal year. Timing of the use of appropriated funds is extremely important. They should be used in the fiscal year in which they are available. If not used within that fiscal year, the money is reprogrammed to another NOAA need or it reverts to the Federal Treasury.
- If appropriately requested and approved, NOAA funds may be carried over one additional fiscal year. Approval is not automatic or guaranteed. Time-wise, the use of appropriated funds must fit with issuance of contracts for tasks to be done. No additional extensions are allowed beyond the second year.

#### b. Non-NOAA Fund Transfers:

- An incomplete transfer can occur if either of the following happen.
  - Paperwork initiated by the providing agency is incomplete or not followed up to assure the transfer is consummated.
  - Failure on the part of the receiving agency (OFCM) to initiate reimbursable funds for the providing agency.
- Funds transferred into NOAA become no-year money and can be held until utilized.

#### 4. STIWG Coordination Challenge

David Wingerd explained the primary reason for an interagency funding pool. STIWG needs and agency funds availability seldom coincide. It is difficult to coordinate a dozen agencies to allocate funds at the same time, especially on short notice. Some agencies need one-two years to budget funds. Allocating funds when they become available is far easier. As discussed above, this option for NOAA agencies is limited to the current fiscal year. Coordinating funds will be a greater challenge. Understanding the limitation, however, will provide NOAA agencies a better understanding of how to work within the system.

#### 5. STIWG Needs

- Near Crisis. The loss of STIWG funds was discovered November 1998 when STIWG was in the process of executing the DOMSAT Contract Extension and sufficient funds were not available. Fortunately, NOAA/NESDIS discovered that there was an additional year left on the existing contract such that the contract could be delayed without adverse impact. In this way a crisis was avoided.
- A crisis could have occurred in September 1995 when the GOES DCS High Data Rate Project contract was let. We now know sufficient funds were not available to cover engineering cost estimate for the contract. Fortunately, fierce competition lowered the contract bid price by more than \$100,000 such that sufficient funds were available. In this scenario, a serious crisis would have occurred.
- Had the High Data Rate Project contract been completed on time (delayed for more than two years), another problem would have occurred sooner. STIWG funds had been set aside to purchase additional High Data Rate Demodulator, a follow-on option to the current contract. Currently STIWG funds are inadequate to exercise this option.
- Meeting Unmet Needs. Following the audit, the OFCM STIWG account was too small to finance STIWG needs. Since letting important STIWG needs go unmet is unacceptable, creative alternatives were necessary. One alternative was to finance projects outside of the OFCM account. For example, the USGS and the Army Corps of Engineers jointly financed a \$200,000 contract with Ilex Engineering dealing with decoding and conversion of software for the DOMSAT receiver. Although this alternative worked well for two agencies, a central depository is preferred for multiple agencies. An important factor for agency participation is confidence in the financial system. OFCM appears to be taking a proactive role in restoring confidence.

#### 6. Agreements/Actions

- The Federal Coordinator working with the Chief of Office of Finance for NOAA will look for opportunities to garnish end-of-year monies from agencies to finance STIWG activities. Mr. Williamson explained that he has considerable experience in

financing in his previous positions and will work hard to make things happen.

- STIWG must have projects prepared to go to contract near the end of the fiscal year to utilize NOAA year-end funds. The target date to submit potential contracts to OFCM is July 1 of each year.
- Federal Coordinator agreed to trace the NOAA funds (\$280K appropriated funds, 1989-1992 time period) that were lost to the STIWG account. OFCM will find out what they were used for or if the money reverted to the Federal Treasury.
- Federal Coordinator will keep STIWG aware of the status of future NOAA-source funds to assure that the funds are obligated within their time limitations or the one-year time extension is sought. Federal Coordinator and STIWG leadership will work together in this effort.
- OFCM will diligently following and facilitate all future non-NOAA transfers. It will notify both the fund-source agency and STIWG when documentation of the transfer process is completed. Federal Coordinator and STIWG member agencies will work together in this effort.

June 23, 2000

To: Samuel P. Williamson, Federal Coordinator  
From: David Wingerd, USACE, STIWG Chairman

Subject: Year-end money for STIWG Projects

This is a follow-up to the agreements reach in our meeting March 23, 2000. OFCM agreed to find year-end money to finance STIWG projects. All STIWG agencies will appreciate the help you provide.

You requested that STIWG provide you a list of projects that need funding. Below is the requested list of items that must be addressed. Items are listed in their order of priority with DOMSAT being the highest. The lack of funding to support these items could have a detrimental effect on the DCS (data collection system) service. For example DOMSAT is in an emergency situation. Without replacement there is a possibility of terminating the DCS operations. All items need immediate attention to continue and support the GOES DCS data re-transmission. The first three are hardware items that are of immediate concern. The last three are important to sustain the system.

NOAA/NESDIS assures me that all of these items are ready for contract and that funds could be committed before the end of FY 2000. I urge that funding for these items be addressed as soon as possible.

When funding is identified, I would like to see financial officers from OFCM and NESDIS brought together to avoid any miscommunication and to expedite the transfer.

1. DOMSAT Communications Contract	\$136,033
2. HDR Demodulator Contract (NOAA Contract # 50-DGNE-5-00089)	\$107,500
3. Transmitter Location System Demonstration	\$250,000
4. CDMA/TDMA Interface and Compatibility Study	\$250,00
5. Transmitter Enhancement and Redesign Development	\$500,000
6. Value-added Disseminated DCS Data System -	\$500,000

Thanks for your concern and willingness to take a proactive role in this matter.

## Wingerd, David B HQ02

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**From:** James Harrison [James.Harrison@noaa.gov]  
**Sent:** Thursday, July 06, 2000 10:48 AM  
**To:** Wingerd, David B  
**Cc:** Samuel Williamson; Donald Carver; Christina Bork  
**Subject:** Need for Additional STIWG Information

Dave,

Thank you for your June 28 emails regarding year end money for STIWG projects and the DOMSAT contract. It is our plan to approach the agencies about funding for STIWG needs and to do our best to acquire the funding. However, in order for us to communicate with the agencies and to build the best possible case for their support, we need more information from you. In particular, for each of the six items listed in your June 28th email concerning year end money for STIWG projects we need the following:

(1) A paragraph or more describing the STIWG need. It is not enough to say there is a STIWG need and give it a title. We have to describe the nature of the item and the capability, identify when any current contracts expire, and say what funding is needed and when it is needed in case the capability can be obtained by incremental expenditures. We need to be able to articulate what the legitimate needs are, and when they are needed.

(2) What agencies benefit from each of the items listed? We need to know which agencies stand to gain the most from the capabilities and how, so that we can build the strongest case for agency contributions. We plan to check within NOAA and other agencies supporting STIWG activities for year end money. This is not to take the place of your working with your agency contacts to acquire funding, but to be in addition to your efforts.

If possible, please let us have this information before you leave for your STIWG meeting in Portland.

Regards,

Jim Harrison  
Deputy Federal Coordinator

## **DOMSAT (Domestic Satellite) Communications Contract**

**Nature of the item:** DOMSAT is a data distribution transmission service. Field data is transmitted via the GOES Satellite and received at the NOAA/NESDIS ground station at Wallops Island, VA. The data is retransmitted via DOMSAT to all points in the U.S. This is the most efficient and cost effective way to move data to the users and the secondary users (own no GOES gages, but read the data from others).

**Current contract expiration date:** October 2000

**When Funding is needed :** The contract is for one year with nine one-year continuation options for a total of ten years of service. The following is the cost estimate for the monthly reoccurring costs (MRC), non-reoccurring cost (NRC) and annual totals costs.

	MRC	NRC	ANNUAL TOTALS
First Year :	\$9,870.00	\$17,593.00	\$136,033.00
Years 2 - 3 :	2,136.00	00.00	25,632.00
Years 4 -10:	3,383.00	00.00	40,596.00

**What Agencies Benefit:** Agencies have come to rely on the DOMSAT as their primary method of receiving data. Not only federal agencies ( i.e. DOC, DOI, DOA, DOT, DOD etc.) but state and local agencies have constructed receive sites that receive DOMSAT data.

**Which agencies stand to loose the most without DOMSAT:** Agencies with the most gaging sites (e.g. DOI, DOD, DOA) would appear to be the biggest losers without DOMSAT. However because of the time- value of the data, these agencies will find a way to obtain their data. The agencies that may be the most severely effected are small or secondary user agencies (e.g. small federal, states, and locals) that have no backup system.

## **HDR Demodulator Contract**

**Nature of the item:** The current high data rate (HDR) development contract, NOAA # 50-DGNE-5-00089, contains options to purchase additional demodulators. This electronic hardware that allows the NOAA/NESDIS grounds receive system at Wallops to read the GOES messages that are transmitted from the field. The current demodulators, developed in the 1970's, transmit at 100 baud. Recent STIWG development contracts produced the 300 and 1200 baud demodulator blueprint and minimal number of demodulators to get things started. Included in the contract was the option to purchase additional demodulators to meet STIWG needs. STIWG needs to exercise these options. The demodulators will make more HDR GOES DCS channels available to the DCS user community. It should be noted that the build period, once an option is exercised, is six months after receipt of award. This requirement was added to the contract to enable additional demodulators at a fixed price to be purchased by the STIWG over a extended time line.

**Current Contract (NOAA Contract # 50-DGNE-5-00089):** This contract provides for the following HDR demodulator options that STIWG needs to exercise.

23 -- 300 bps Demodulators @ \$ 3,350 each \$ 77,050  
7 -- 1200 bps Demodulators @ \$ 4,350each \$ 30,450  
TOTAL----->\$107,500

**What Agencies Benefit:** All agencies benefit from modern higher data rate technology. Not only federal agencies (i.e. DOC, DOI, DOA, DOT, DOD etc.) but state and local agencies have constructed receive sites that gather DOMSAT data.

**Which agencies stand to loose the most without DOMSAT:** Agencies with the longest messages (DOC) are the biggest losers without modern higher data rate technology. For example NOAA/NOS have remote ocean sites that transmit volumes of data. The length of the message is limited, and the speed of the transmission further limits their throughput. With recognition of the effect of the oceans on the weather, this information initially effects the collecting agency, but ultimately effects a broad spectrum of users.

## **CDMA Demonstration**

**Nature of the item:** Coded Data Multiple Access (CDMA) is a transmission technique that allows users to transmit simultaneously instead of one at a time on a channel. If the current system receives two simultaneous messages, both are garbled. As a result each user/platform is given a specific channel/time slot so that no two messages arrive at the same time. Not only is this very labor intensive to manage, but many users can not use the time slots that fit their application requirements, and any deviation from the transmission schedule creates an interference problem. For example many users request time slots at the top of each hour, specifically to accommodate NOAA/NWS for forecast models. Since there are a limited number of these time slots at the top of the hour, some data arrives too late to go into the models. This limiting factor is a great data loss for those forecast models. CDMA technology would allow users to transmit at a time that fits their requirements. In addition, testing has demonstrated that the CDMA system may coexist with users of the current Time Division Multiple Access (TDMA) system, thereby effectively doubling the capacity of this valuable, but limited resource.

**Contract:** This is a new contract with an estimated price of \$250,000.

**When Funding is needed:** The sooner we can begin this contract the better. This will be a multi year project to develop this technology.

**What Agencies Benefit:** All user agencies of the GOES DCS system would benefit from this enhancement. Not only federal agencies (i.e. DOC, DOI, DOA, DOT, DOD etc.) but state and local agencies would benefit from the flexibility to implement their programs in the most effect manner, and from the increased system capacity. NOAA/NWS especially benefits from the availability of more data to go into national forecast models.

**Which agencies stand to loose if this is not implemented:** All users lose because of the dwindling resource availability of the system. At a time when more and more platforms are being added, more users are being added to the system (both domestic users, and international users who collect data of vital importance to the world meteorological organization), the resources are being stretched to their limits.

## **Channel Interference Monitoring System**

**Nature of the item:** Channel Interference Monitoring System allows for the tracking of unauthorized transmissions using GOES DCS frequency allocations. The current system has no capability to track violators of both FCC regulations and NESDIS usage policies who invade the GOES DCS frequencies. This is perhaps the largest stumbling block to effectively managing the frequency allocations. Unauthorized transmissions prevent the proper transmission and collection of vital environmental data for forecasting and emergency warning programs. Continuous transmissions at a given frequency and time can cause the resources to be blocked. Currently, one entire channel of the GOES DCS system is unavailable for use due to a continuous unidentifiable transmission that has been ongoing for several years. Efforts to identify the culprits have been unsuccessful. In other instances, platforms with technical difficulties may jump from their authorized channel/time slot to another causing serious interference problems for other users. A system that allows NOAA/NESDIS to identify the source of a transmission would provide for more effective management of frequency allocations, in accordance with both U.S. and International regulations and guidelines.

**Contract:** This is a new contract with an estimated price of \$250,000.

**When Funding is needed:** The sooner we can begin this contract the better. This will be a multi year project to develop this technology.

**What Agencies Benefit:** All user agencies of the GOES DCS system would benefit from this enhancement. Not only federal agencies (i.e. DOC, DOI, DOA, DOT, DOD etc.) but state and local agencies would benefit from the ability to more effectively manage the limited resources available.

**Which agencies stand to loose if this is not implemented:** All user agencies stand to lose because of the dwindling resource availability of the system. At a time when more and more platforms are being added, more users are being added to the system (both domestic users, and international users who collect data of vital importance to the world meteorological organization), the resources are being stretched to their limits. Better management of these resources will provide for more effective utilization of the system as a whole.



DEPARTMENT OF THE ARMY  
U.S. Army Corps of Engineers  
WASHINGTON, D.C. 20314-1000

REPLY TO  
ATTENTION OF:

7 July 2000

Mrs. Linda Brown  
U.S. Department of Commerce, NOAA/NESDIS  
Office of Satellite Operations  
5200 Auth Road E/SO, FB4, Rm. 0135  
Suitland, Maryland 20746-4304

Dear Mrs. Brown:

The current GE Americom domestic satellite (DOMSAT) contract for the distribution of the GOES data collection system (DCS) data is due to expire on September 30, 2000. This service supports vital data collection programs of many federal, state and local agencies. To have a new contract in place before the expiration deadline, preparation and processing of the contract needs to start immediately.

Satellite Telemetry Interagency Working Group (STIWG) asked NOAA/NESDIS to provide contracting services to ensure the continuity of service. Mr. Marlin O. Perkins, Direct Services Division, prepared a contract that meets the STIWG requirements and forwarded it to you. The contract is for one year with nine one-year continuation options for a total of ten years of service. He provided the following cost estimate for the monthly reoccurring costs (MRC), non-reoccurring cost (NRC) and annual totals costs.

MRC	NRC	ANNUAL TOTALS	
First Year :	\$9,870.00	\$17,593.00	\$136,033.00
Years 2 - 3 :	2,136.00	00.00	25,632.00
Years 4 -10:	3,383.00	00.00	40,596.00

The STIWG agrees to finance the DOMSAT Contract based on the above cost estimates and requests NOAA/NESDIS immediately proceed with the procurement of this contract. Funds are available for the first year (\$136,033.00) and will subsequently be made available for optional years. For financial arrangements, please contact Mr. Donald Carver, OFCM, (301) 427-2002.

Thanks for your help and concern. Your cooperation is greatly appreciated.

Sincerely,

David Wingerd, Chairman,  
Satellite Telemetry Interagency Working Group

# What did HDR Cost?

## ■ STIWG to Date

▶ Phase I - Engineering Model	\$ 189,910
▶ Phase II - Operational Equipment	\$ 78,625
▶ Certification Test Sets	\$ 29,702
Sub-total	\$ 298,238

## ■ Optional Demodulators

▶ 300 bps (Each) 23 left X 3,350	\$ 77,050
▶ 1200 bps (Each) 6 left X 4,350	\$ 26,100
Subtotal	\$ 103,150

Two Additional Certification Test Sets Purchased \$ 13,850



# Recent HDR Events

Within the last Six Months

ISI Still Under Contract to Fix DAPS Interface Problems

Demodulators 300 bps Sync & 1200bps Async

ITT Y2K and adding a Second ITT w/Antennas

ITT Control Word Modifications

DAPS has been UNSTABLE to premit changes

Still waiting for Final VITEL Documentation

Final Payment has been Withheld



# Where are we Going?

## NESDIS Short Term

- Systems remains Experimental
- Certification Sets been loaned to two manufacturers
- Optional Demodulators will Take a Year to Obtain
- 1st Manufacturer has requested Test set for High Data Rate DCP Certification Documentation Expected to be ongoing in August 2000
- Two other manufacturers expected to certify by October 2000 and once Certified 100 bps is passe
- Couple of minor Changes may be made after first Certification



## **PROPOSAL for ENGINEERING TESTS**

There are three major areas of concern with the DCS HDR System:

1. Performance at low  $E_s/N_0$  conditions and under high transponder loading:

- The High Data Rate System uses Viterbi Coding, Scrambling, and interleaving. These data handling schemes can give "Coding Gain", that is, performance of the system should be good at even low signal-to-noise levels. However, with 8-psk modulation, there is very little tolerance of noise bursts in the signal and an erroneous bit in the data stream can cause phase reversal and loss of data following that occurrence.

2. Performance in the presence of signals in adjacent channels:

- There is a possibility that the data sidebands of signals in adjacent channels could cause interference. This is especially true if the signals drift in opposite directions (toward each other) and begin to overlap.

3. Performance through a transponder that may introduce phase noise in the link from the satellite.

4. There is a collateral concern, one not addressed before. There are now CDMA (Spread Spectrum) signals present in the transponder. The manifestation of these transmissions, and there may be many simultaneous transmissions, is an increase in the noise pedestal, thus reducing the signal-to-noise level of all other signals present. Their presence may have some unexpected effect on system performance. This will be tested if the signals are present during the test period.

I propose to perform tests at Wallops Station that will determine whether these concerns have merit, define the operational parameters of the sub-system,

### **COST PROPOSAL**

The cost for the projected cost for this project is \$2100.00 including expenses. A breakdown of the costs are:

- Testing of the system - \$900.00
- Data analysis and preparation of the final report - \$800.00
- Expenses - \$400.00 (Travel to Wallops, materials, travel to present the final report)

Should follow-up testing be required, the additional cost is projected to be \$500.00.

## **DCS HDR TEST PLAN**

This test plan is designed to prove the operability, under certain conditions, of the DCS High Data Rate System, specifically the 1200 bps system. It will require that both Improved Test Transmitters (ITT) and the existing 100 bps Test Transmitter (TT) be made available for the tests. I will also need available two of the 1200 bps Demodulators set for adjacent channels, a Spectrum Analyzer, a Bit Error Rate Test Set, a two channel Oscilloscope and TBD.

### **1.0 TEST SET-UP AND PROCEDURES:**

#### **1.01 Bit Error Rate Test:**

Set both ITT's up for +51 dBm EIRP, 1200 bps operation, and on adjacent channels. (Set the test ITT for the lower channel.) One ITT will transmit continuously with a TBD pattern while the other is modulated with the Bit Error Rate Test Set (BERTS).

- Run a normal BER in this set-up plotting the response as errors vs. Es/No. Reduce the EIRP by 2 dB for each test until errors are detected and then by 1 dB thereafter.

#### **1.02 Adjacent Channel Interference:**

Using the above test set-up, perform the following tests.

- Move the frequency of the test ITT up in channel +0.4KHz. Repeat the above test.
- Move the frequency of the second ITT down by -0.4KHz. Repeat the above test.

From each of the above tests, determine the minimum EIRP required for nominal operation at TBD Es/No.

#### **1.03 Channel Loading Test:**

The test is designed to determine the channel stability under varying conditions of transponder loading. Owing to the fact that this is an operational system the amount loading that can be achieved is limited. However this test will attempt to show the effect of varying transponder noise power by exercising the spacecraft a.g.c. to the extent possible.

- Set the Test ITT for a nominal +45 dBm EIRP
- Set the second ITT in the carrier only mode and at an EIRP of +51 dBm or as high as it will go.
- Set the 100 bps TT for it's highest output power and in the carrier only mode.

- Perform a BER on the test ITT. While doing so, switch the 2 "loading" Test Transmitters off and back on at 10 to 15 second intervals. This test should be performed during one of the high activity times for the DCS System. This will provide a reasonable simulation of loading characteristics.
- Repeat the until the BER increases or until burst-errors are seen at the rate that the ITT is cycled on and off.

#### **1.04 Burst Message Signal Acquisition test:**

This test will determine how well the HDR Demodulators acquire signals with lower and varying levels.

- Bring the test ITT up and set the the power output level at the point where errors were first detected in test 1.01.
- Turn it off and begin sending burst messages Send each message 5 times and determine whether errors were detected. Reduce the output power by 1 dB after each 5 messages and retest.

5/25/94

Attachment 7

COMMITTEE FOR BASIC SERVICES AND HYDROLOGY SUBCOMMITTEE

~~PROPOSED~~ TERMS OF REFERENCE  
FOR  
SATELLITE TELEMETRY INTERAGENCY WORKING GROUP

1. Sponsorship

The Satellite Telemetry Interagency Working Group (STIWG) is jointly sponsored by the Interdepartmental Committee for Meteorological Services and Supporting Research (ICMSSR) and the Interagency Advisory Committee on Water Data (IACWD). STIWG will report directly to the Committee for Basic Services (CBS) of ICMSSR and the Hydrology Subcommittee of IACWD.

2. Purpose

a. The STIWG shall be responsible for advising CBS and the Hydrology Subcommittee on matters concerning satellite telemetry user requirements as they relate to hydrologic, meteorologic, oceanic, and other environmental data; shall promote current information exchange including the sharing of data, research and development results, and other technical information among agencies; and will undertake projects at the direction of either CBS or the Hydrology Subcommittee.

b. The STIWG will coordinate ~~these activities~~ with the Committee on Operational Environmental Satellites, which operates under ICMSSR, to facilitate the integration of satellite telemetry user requirements with the design and operation of satellites and ground systems.

3. Membership

a. Federal agencies may participate in STIWG when matters of concern to them are involved. Each Federal agency using satellite telemetry will be eligible for membership on the STIWG and will be entitled to one official voting representative and additional observers as desired. Each agency having membership on STIWG will maintain a current listing of its representative and alternate(s) on file with the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) and, through the Hydrology Subcommittee, the Office of Water Data Coordination (OWDC).

b. The <sup>rotational schedule</sup> Chairperson and Secretary of the STIWG shall be determined by common consent of official agency representatives. Both the Chairperson and Secretary shall rotate annually among the member agencies. <sup>calendar year.</sup> NOAA representatives cannot serve as chair.

c. The National Environmental Satellite Data and Information Service (NESDIS) will be represented on the STIWG as the Satellite Data Collection System's Manager, and Operator.

#### 4. Procedures

a. Meetings shall be <sup>semi-annually</sup> quarterly or at the call of the Chairperson upon the request of one or more members to carry out a specific task. Normally, notification of meetings and an agenda will be distributed to members of the Group, the CBS, and the Hydrology Subcommittee in advance of the meetings.

b. All decisions shall be on the basis of unanimous agreement by the user members whose agencies are parties to the decision or subsequent action. When interagency agreement is not reached on significant questions, the matter will be referred to the CBS or the Hydrology Subcommittee, as appropriate, for resolution.

c. The official agency representative will act as the agency spokesperson in matters of concern to STIWG.

d. Coordination will be effected at meetings, by correspondence, or by documented telephone calls.

e. The STIWG may establish internal procedures for conduct of business; however, the establishment of additional groups must have prior approval of the CBS and Hydrology Subcommittee.

#### 5. Reports

a. STIWG shall prepare reports and publications needed to fulfill the purposes of the Working Group and others as requested by CBS and the Hydrology Subcommittee.

b. STIWG shall submit to the Executive Secretary of the CBS and the Chairperson of the Hydrology Subcommittee by October 1 of each year, a status report that contains:

- Accomplishments of the past fiscal year;
- Activities planned for the forthcoming fiscal year; and
- A brief discussion of problems encountered and of other matters of interest

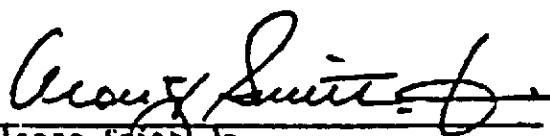
c. Minutes of STIWG meetings shall be provided to all agency representatives, the Executive Secretary of CBS, and the Chairman of the Hydrology Subcommittee for distribution, as appropriate.

d. Chairperson of the STING shall report current activities (1) at the Hydrology Subcommittee meetings and (2) at CBS meetings, as appropriate.

e. STING will keep OFCM and DWDC informed of significant accomplishments and activities by providing information copies of correspondence, reports and other documents.

6. Termination

The Hydrology Subcommittee and CBS shall annually review STING activities and provide to IACWD and ICMSSR a recommendation on STING continuance. The STING shall remain in existence until terminated by joint action of ICMSSR and IACWD.

  
 Alonzo Smith Jr.,  
 Executive Secretary, ICMSSR

7/10/85  
 Date

  
 Edgar Imhoff  
 Acting Executive Secretary, IACWD

7/9/85  
 Date